How to do hard real-world coding with AI

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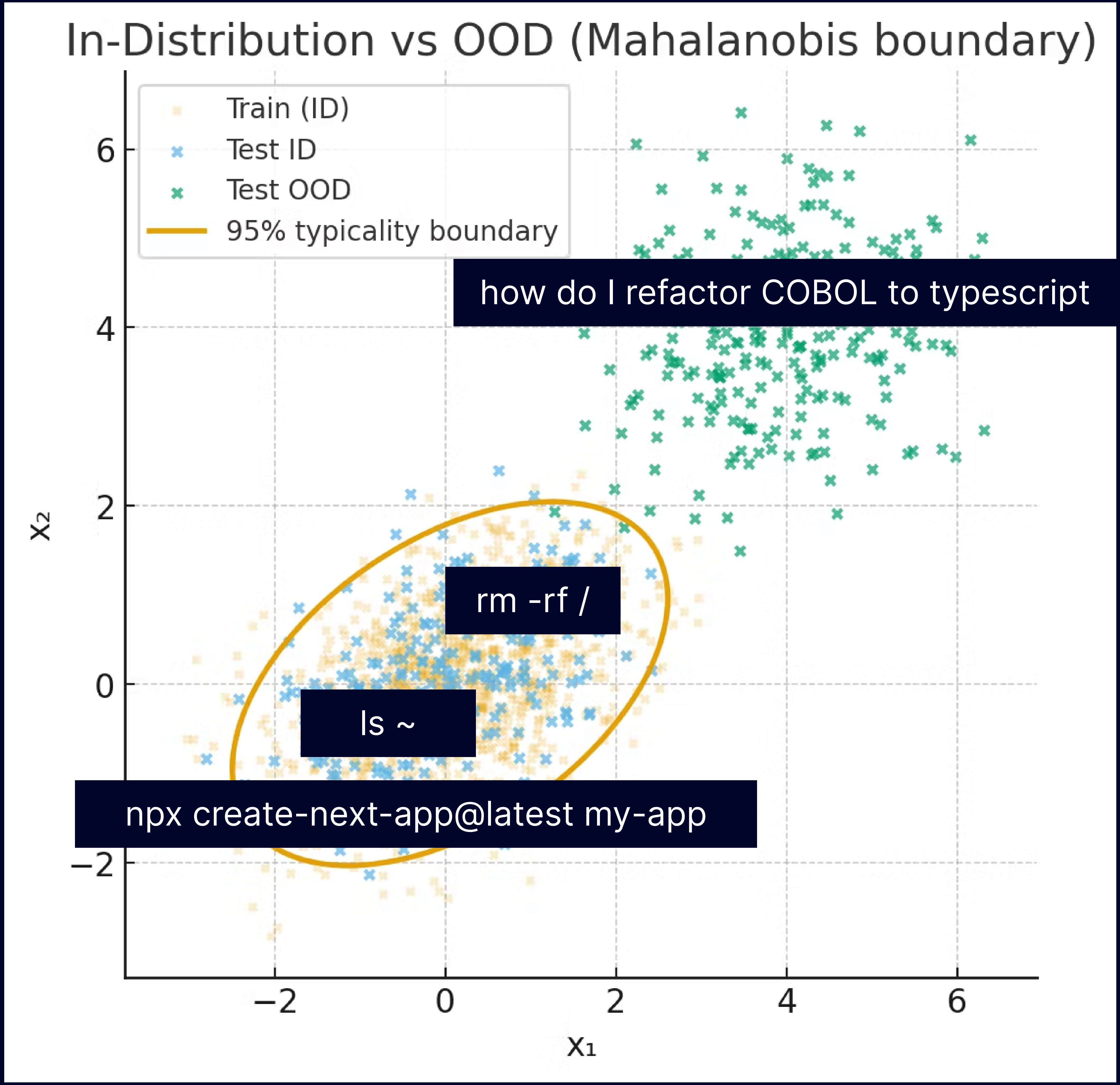
Microdoc Founder and CEO

Supabase

@supabase

Supervising while Cursor deletes files at random



how do I refactor COBOL to typescript

```
rm -rf /
```

```
ls ~
```

```
npx create-next-app@latest my-app
```

Goal: How to do hard real-world coding with AI

Accuracy

Did the agent write valid code?

Did the agent understand what I wanted?

Completeness

Did the agent finish the task in full?

Did the agent introduce regressions?

Coding pipeline

1. **Understanding**
2. **Planning**
3. **Implementing**
4. **Checking**

1. Understanding
2. Planning
3. Implementing
4. Checking

Practical tips

Research in the codebase to find all relevant context.

Start by asking me a series of clarifying questions

Research in the codebase. Propose a few different options for the solution. Note which option you think is best

1 **Understanding**

2 **Planning**

3 **Implementing**

4 **Checking**

```
🤖 ./setup-project <project-name>
```

- README.md
- USER_STORY.md
- DESIGN.md
- REQUIREMENTS.md
- VALIDATION_STRATEGY.md
- STATUS_UPDATES.md
- PROGRESS_TRACKER.md
- RETROSPECTIVE.md
- scripts/README.md

1. Understanding
2. Planning
3. Implementing
4. Checking

The bash script is available on briankelleher.ie under the `projects` section

👨 Start work on Phase 1, ticking items off as you go

🤖 I've finished Phase 1

🔍 Checking in progress tracker...

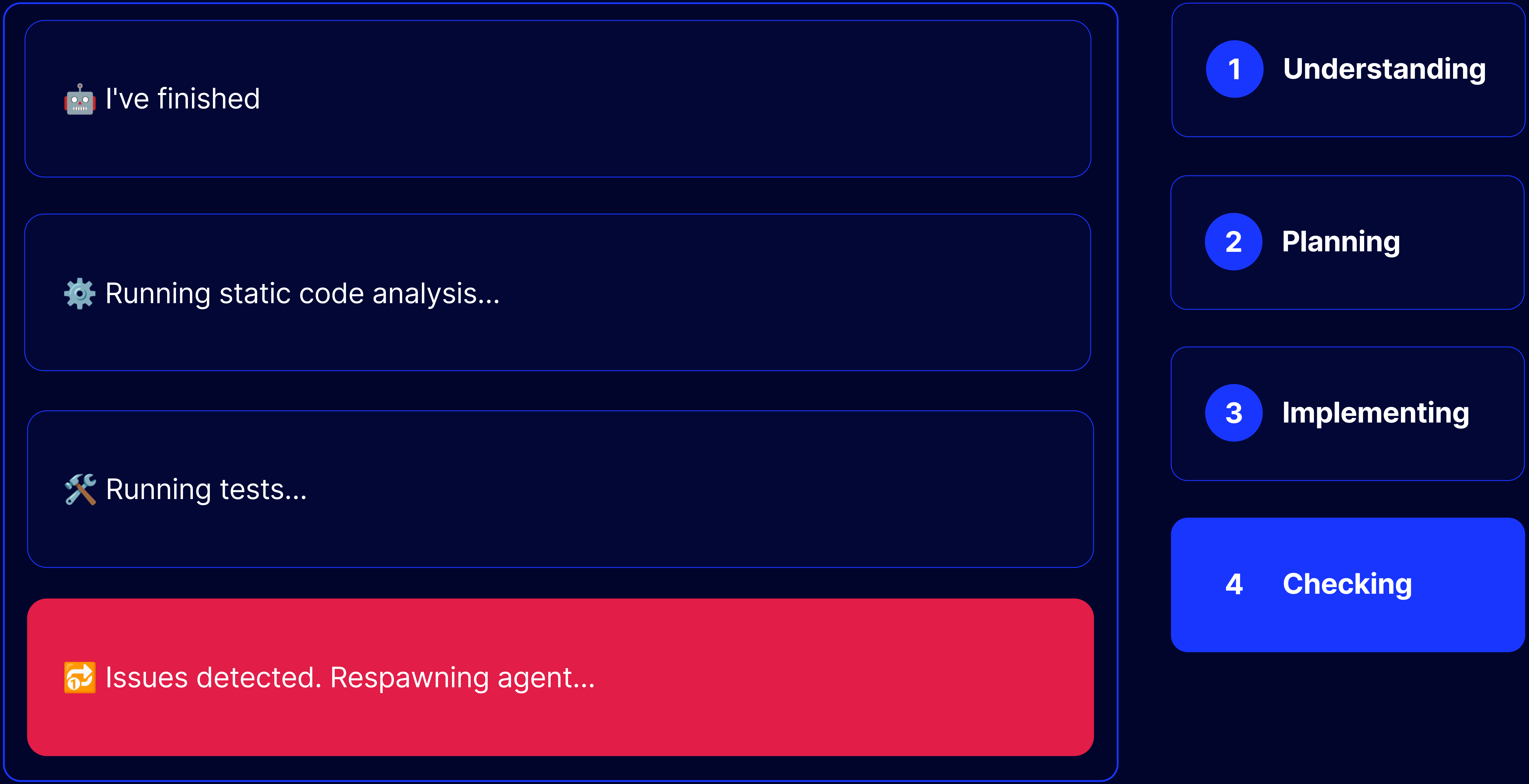
🔂 Issues detected. Respawning agent...

1 Understanding

2 Planning

3 Implementing

4 Checking



🤖 I've finished

⚙️ Running static code analysis...

🛠️ Running tests...

🔂 Issues detected. Respawning agent...

1 Understanding

2 Planning

3 Implementing

4 Checking

Concrete tips for better AI coding

Prompting techniques

1. Research and understand thoroughly before writing any code
2. Don't write code yet, focus on researching, analysing, and understanding
3. Ultrathink - this is an extremely hard problem
4. Let's take a step back. Clearly lay out what you have done and what you have left to do
5. Ask me a series of clarifying questions before proceeding
6. Restate your understanding of this in your own words before proceeding
7. Implement the best, most long term, most elegant, most idiomatic solution

Project and Workspace Setup

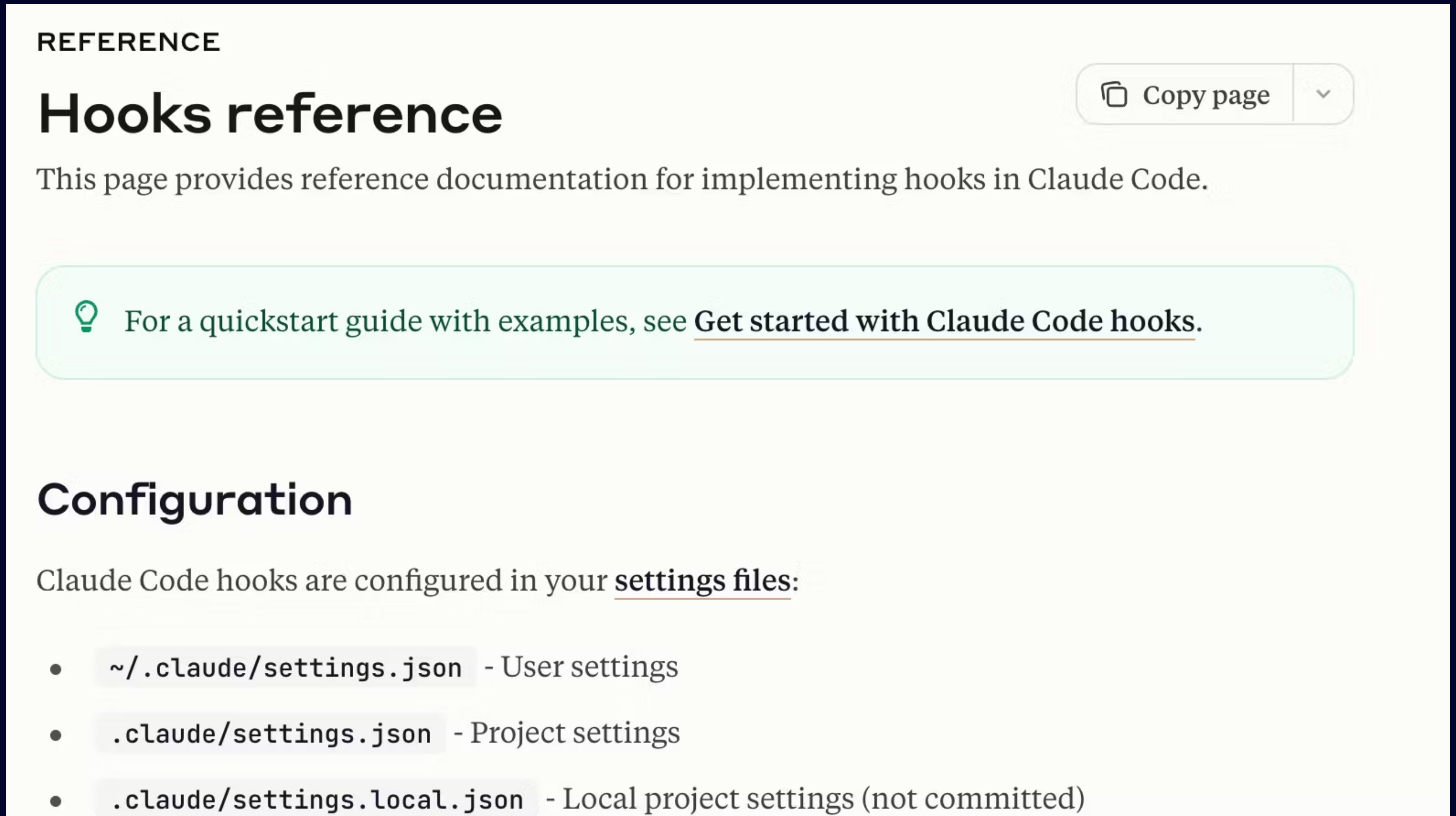
1. Bash-script-generated isolated workspaces
2. Use *AGENTS.md*, *CLAUDE.md*, *.cursorrules*, etc (config files)
3. Be opinionated when giving AI code style guidelines in config files
4. Continuously update config files as you discover limitations
5. Ensure proper CI, static type checking

The bash script is available on briankelleher.ie under the `projects` section

Concrete tips for better AI coding

Verification Techniques

1. LLM-to-LLM self-consistency checks.
   "My junior idiot colleague has done X, check their work'
2. Type-checking and static analysis and LSP in hooks 😍



REFERENCE

Hooks reference

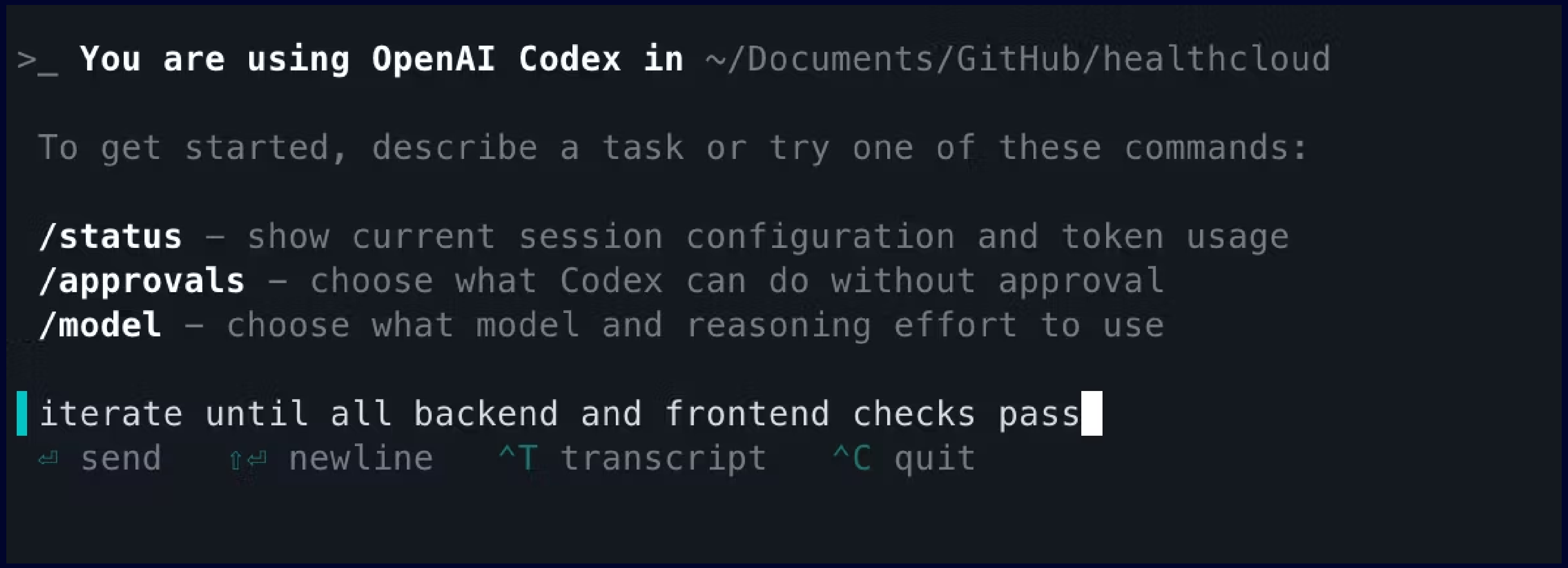
This page provides reference documentation for implementing hooks in Claude Code.

For a quickstart guide with examples, see **Get started with Claude Code hooks**.

Configuration

Claude Code hooks are configured in your **settings files**:

- `~/.claude/settings.json` - User settings
- `.claude/settings.json` - Project settings
- `.claude/settings.local.json` - Local project settings (not committed)



```
>_ You are using OpenAI Codex in ~/Documents/GitHub/healthcloud

 To get started, describe a task or try one of these commands:

 /status – show current session configuration and token usage
 /approvals – choose what Codex can do without approval
 /model – choose what model and reasoning effort to use

▌iterate until all backend and frontend checks pass
 ⏎ send   ⇧⏎ newline   ^T transcript   ^C quit
```

Concrete tips for better AI coding

Logging

Add copious logs throughout in all relevant places

Concrete tips for better AI coding

How to get better responses

Compute

Ask the same prompt many many many times then get another model to choose the best response

Orchestration

Split up a task over several sub-tasks

Better models

Use better models (e.g. o3-pro instead of o3)

Better tools

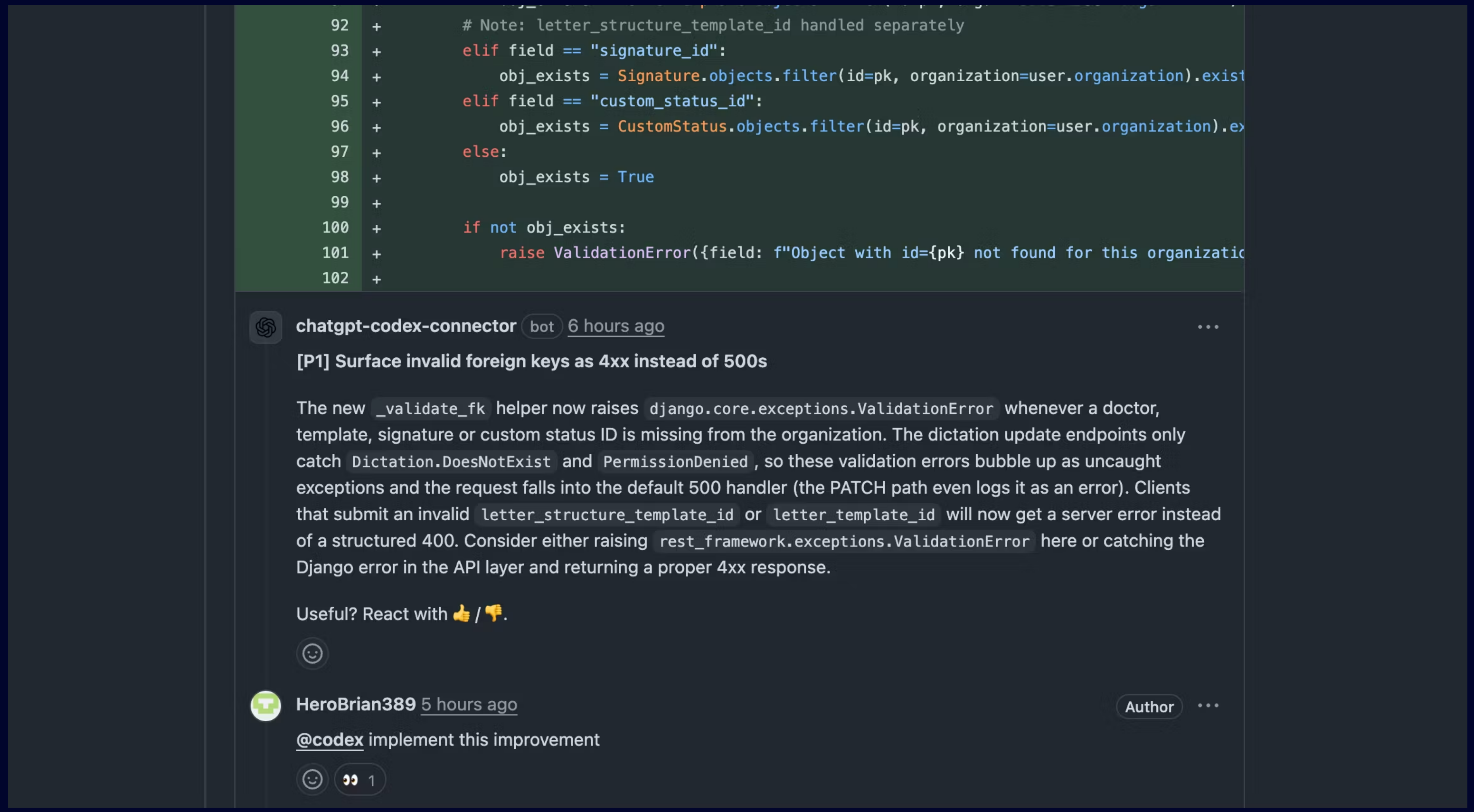
Give tools. You can use lots of compute getting an LLM to calculate 443×122, or just use a calculator tool

Context engineering

Remove content that is not relevant to allow the LLM to focus on the most important parts of the question

Concrete tips for better AI coding

AI code review



```
+        # Note: letter_structure_template_id handled separately
+        elif field == "signature_id":
+            obj_exists = Signature.objects.filter(id=pk, organization=user.organization).exist
+        elif field == "custom_status_id":
+            obj_exists = CustomStatus.objects.filter(id=pk, organization=user.organization).ex
+        else:
+            obj_exists = True
+
+        if not obj_exists:
+            raise ValidationError({field: f"Object with id={pk} not found for this organizatio
+
```

chatgpt-codex-connector bot 6 hours ago

[P1] Surface invalid foreign keys as 4xx instead of 500s

The new `_validate_fk` helper now raises `django.core.exceptions.ValidationError` whenever a doctor, template, signature or custom status ID is missing from the organization. The dictation update endpoints only catch `Dictation.DoesNotExist` and `PermissionDenied`, so these validation errors bubble up as uncaught exceptions and the request falls into the default 500 handler (the PATCH path even logs it as an error). Clients that submit an invalid `letter_structure_template_id` or `letter_template_id` will now get a server error instead of a structured 400. Consider either raising `rest_framework.exceptions.ValidationError` here or catching the Django error in the API layer and returning a proper 4xx response.

Useful? React with 👍 / 👎.

HeroBrian389 5 hours ago Author

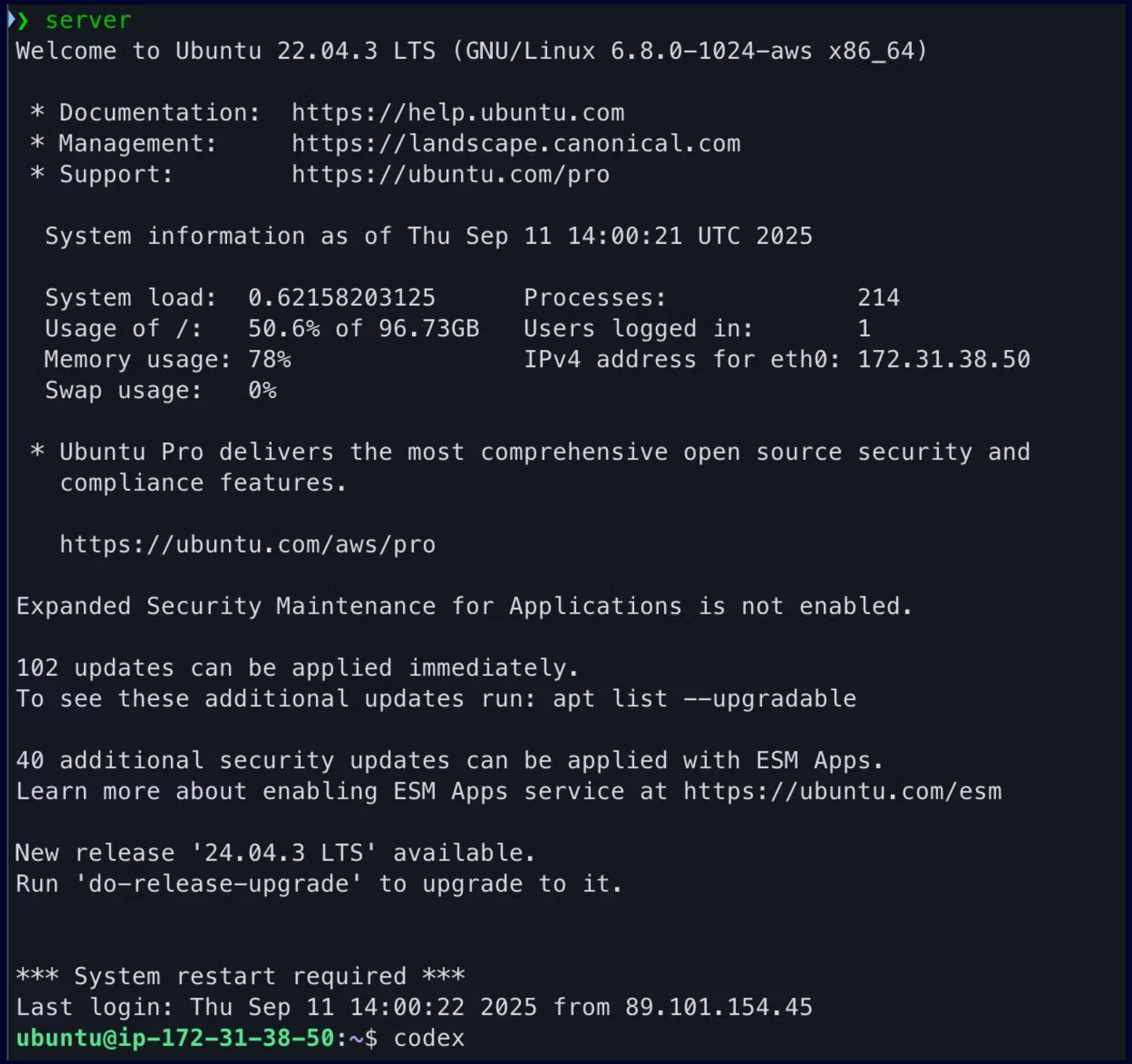
@codex implement this improvement

👀 1

Concrete tips for better AI coding

Using lightweight servers to remote AI code

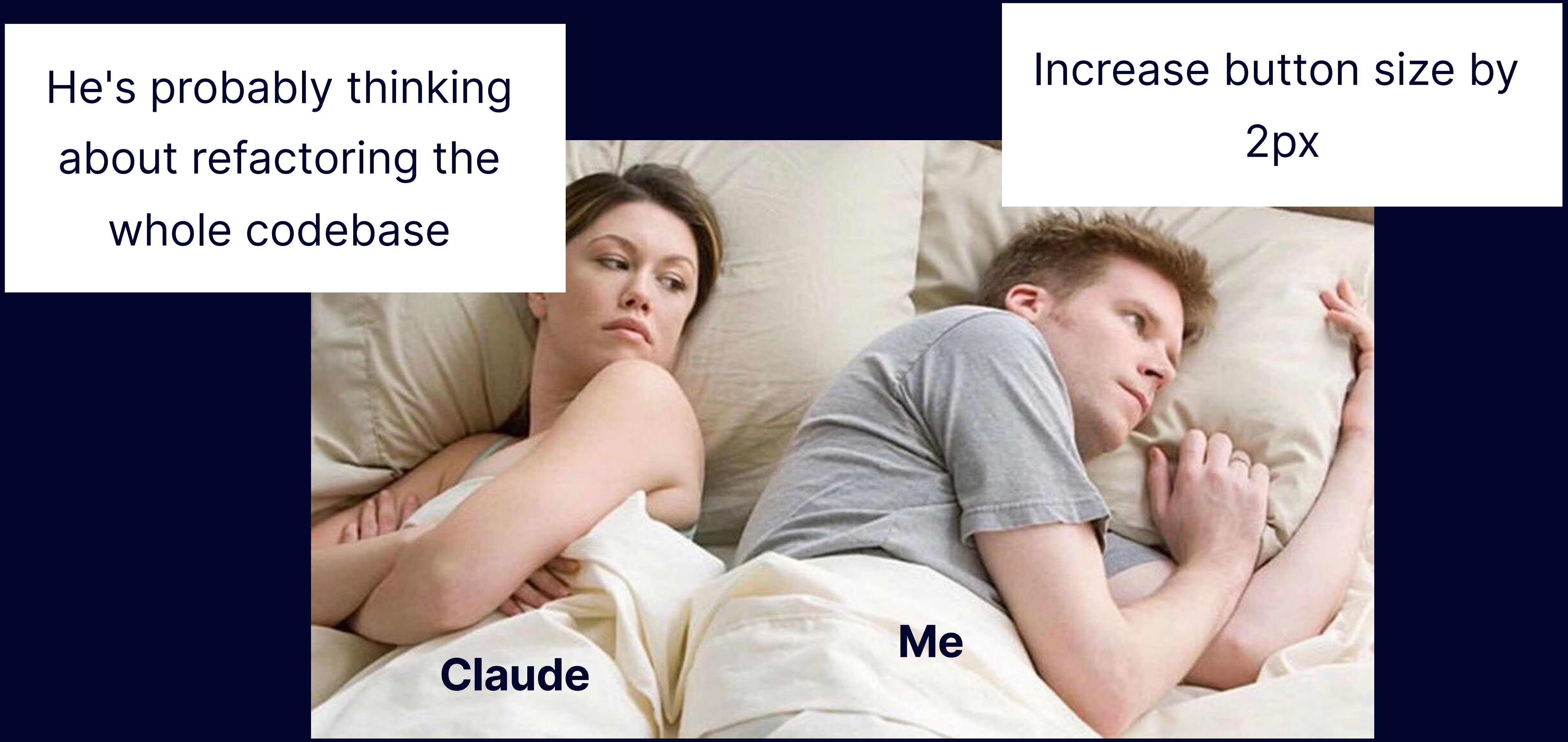
Use `screen` or similar software to manage different pieces of work



```
❯ server
Welcome to Ubuntu 22.04.3 LTS (GNU/Linux 6.8.0-1024-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro

  System information as of Thu Sep 11 14:00:21 UTC 2025

  System load:  0.62158203125      Processes:             214
  Usage of /:   50.6% of 96.73GB   Users logged in:       1
  Memory usage: 78%                IPv4 address for eth0: 172.31.38.50
  Swap usage:   0%

 * Ubuntu Pro delivers the most comprehensive open source security and
   compliance features.

   https://ubuntu.com/aws/pro

Expanded Security Maintenance for Applications is not enabled.

102 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

40 additional security updates can be applied with ESM Apps.
Learn more about enabling ESM Apps service at https://ubuntu.com/esm

New release '24.04.3 LTS' available.
Run 'do-release-upgrade' to upgrade to it.


*** System restart required ***
Last login: Thu Sep 11 14:00:22 2025 from 89.101.154.45
ubuntu@ip-172-31-38-50:~$ codex
```

Limitations

Memory


He's probably thinking about refactoring the whole codebase
Increase button size by 2px
Claude
Me

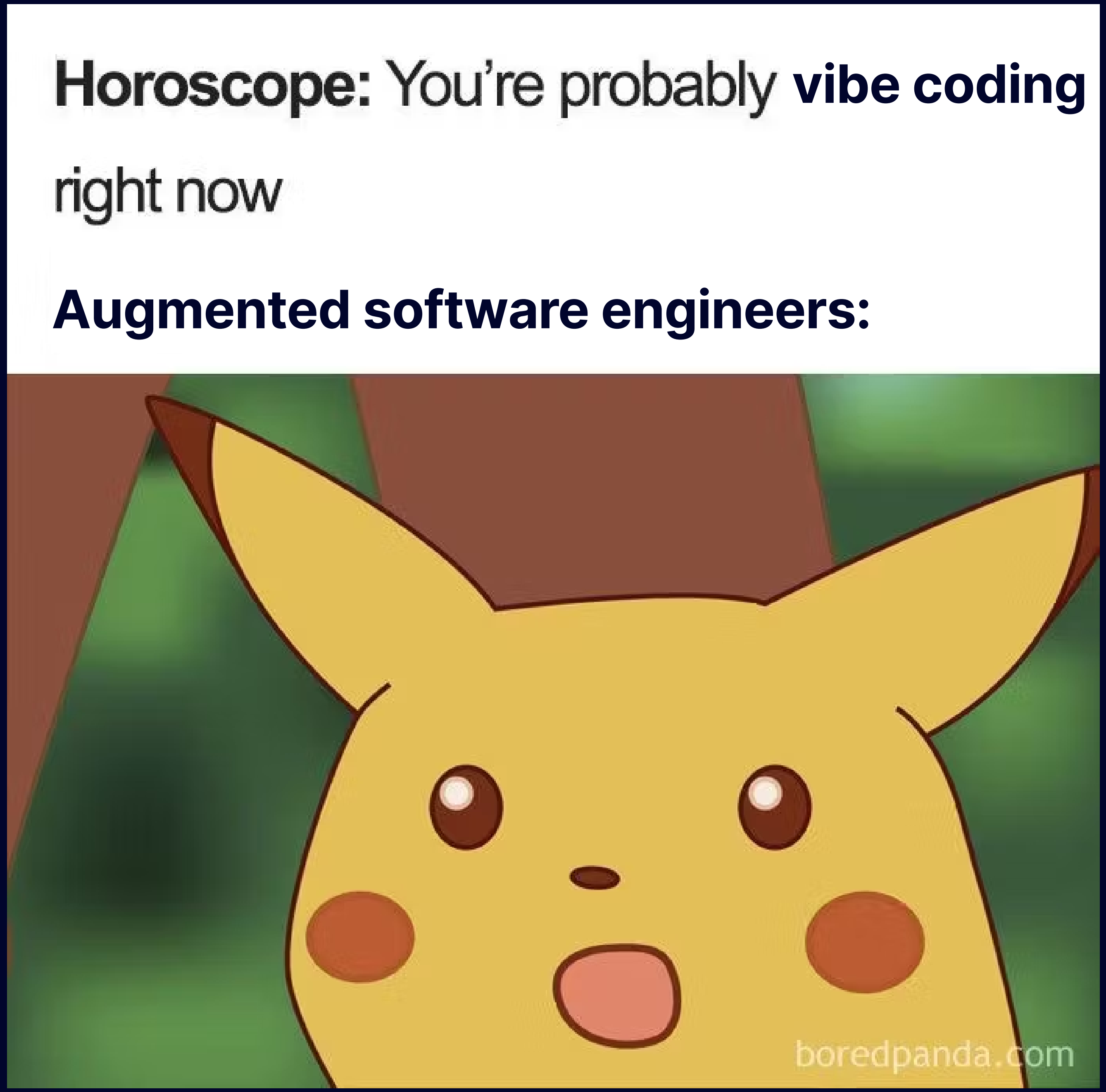
Epistemic access

Predictions

1. Memory improvements
2. Less degenerate behaviour
3. These techniques will be productised
4. Increased model competition

Best: GPT-5-thinking-high

Opus 4.2/4.5, Gemini 3 Pro coming soon



Horoscope: You're probably **vibe coding** right now

Augmented software engineers:

Key takeaways

1. Always start with clarifying questions
2. Use structured projects to manage pieces of work
3. Use automated verification at every step

Demo

Questions

briankelleher.ie/projects for technical writeups

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